

# Curriculum Vitæ

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## Summary of main achievements:

- The research I carried out during my PhD is internationally renowned in the field of p-type dye-sensitized solar cells.
- With a project I conceived, I was awarded of two of the most prestigious and conspicuous postdoc grant in Europe, the Humboldt Postdoc Fellowship and the International Postdoc Grant of the Vetanskaprådet. I successfully completed the planned project, i.e. developing a new investigation technique crucial to fundamental electrochemical research.
- I am a appreciated teacher and presenter. I was invites to give several talks, I won several conference prizes and was supervisor of several students including a PhD student.

## Education and Training

- **Ph.D. in Physical Chemistry**, Uppsala University (Uppsala, Sweden), defended on the 7<sup>th</sup> June 2017 with Prof. James Durrant as opponent. Thesis title “Discovering Hidden Traps - in NiO dye-sensitised photocathodes”. Supervisors: Prof. Leif Hammarström (main supervisor) and Prof. Gerrit Boschloo (second supervisor).
- **Master of Science in Physical Chemistry** (mark 110/110 *cum laude*), University of Pisa (PI, Italy), 2012.
- **Bachelor of Science in Chemistry** (mark 109/110), University of Pisa, 2009.

## Current and past occupations

- Nov 2022 - present: Researcher (ÅForsk grant) in Prof. Messinger's lab, Department of Chemistry-Ångströmlab, Uppsala University.
- Nov 2019 - Nov 2022: Postdoc (VR grant) in Prof. Messinger's lab, Department of Chemistry-Ångströmlab, Uppsala University.
- Oct 2018 - Nov 2022: Postdoc (from 2019 self supporter by VR, see Grants) in Prof. Dau's lab, Dept. of Experimental Physics, Freie Universität Berlin, Germany.
- Feb 2018 - Oct 2018: Postdoctoral associate in Prof. Čuk's lab, Renewable and Sustainable Energy Institute (RASEI), University of Colorado Boulder/NREL, CO USA.
- Jul 2017 - Dec 2017: Ass. researcher in Prof. Hammarström's labs, Uppsala University
- Jan 2013 - Jun 2017: Ph.D. student in Prof. Hammarström's labs, Uppsala University

## Technical expertises

- *Operando* Raman spectroscopy, Electrochemically-Induced Raman spectroscopy (inventor)
- ns LASER-flash-photolysis
- UV-vis-IR fs transient absorption spectroscopy
- Advanced electrochemistry (EIS, microelectrode e-chem)
- More than 1000 hours of beamline experience in *in-situ* hard x-ray spectroscopy (BESSY II synchrotron, XAS, EXAF, XANES)
- Solar cell, electrocatalytic cell construction and characterization: mesoporous semiconductor synthesis and doping, efficiency, quantum efficiency, charge extraction, spectro-electro-chemistry, Electrochemical-Impedance-Spectroscopy, PIA, ns-TAS kinetics, Time-Correlated-Single-Photon-Counting, Scanning-Electron-Microscopy;
- Other expertises: microelectrode electrochemistry, fluorimetry, HPLC-MS, ATR-IR, glovebox usage, 3D-print modelling;

- programming in: Labview, Arduino (microcontroller), Octave (Matlab), FreeCAD;
- basics organic synthesis.

## Grants and project leadership

- 2018-2019 Awarded the Blanceflor Foundation research postdoc grant for two consecutive years (total amount 260k sek).
- 2019-2022 Awarded the Vetenskapsrådet (VR, Swedish Research Council) “International Postdoc” grant (3M sek, ca. 300K eur for three years)
- 2019-2021 Awarded the Alexander von Humboldt Foundation fellowship for postdoctoral researchers (but I did not perceive any salary, since in overlaps with the VR grant).
- 2023-2025 Awarded the AForsk Repatriation Grant (total 2M sek, ca. 200K eur for two years)

## Teaching experiences

- Supervision of: 2 Bs students (Robin Tyburski, Belinda P. Rimgard), 2 Ms students (Mareike Bechtold, Maria Bruna Stella) at UU and co-supervised a PhD student (Dr. Shan Jiang) at FU.
- Laboratory teacher in 6 courses for several years (quantum mechanics & chemical bonds II, photochemistry, laser spectroscopy, advanced electrochemistry, spectroscopy, sustainability research);
- Quantum mechanics & chemical bonds II: problem solving sessions (2h x4, 2021-present)
- ns-flash photolysis: course co-organizer (2021-present, Uppsala University)
- Molecular Systems for Renewable Energy (2021-present, Uppsala University): co-organizer, I have been responsible of the idealization and organization of the laboratory experiences
- Electrochemical dynamics (new course, Uppsala University): 2h x 2 front lectures on experimental techniques and electrocatalysis.

## Outreach activity

- Participated in more than 10 international conferences, as poster and talk presenter
- Member of the Italian Chemical Society, Swedish Chemical Society, of the Consortium for Artificial Photosynthesis (Sweden) and UniCat Cluster of Excellence (Germany)
- Invited keynote speaker at GEI2022 (conference organized by the Italian Chemical Society)
- Invited speaker as department seminar at University of Pisa and University of L’Aquila
- SciFest (Uppsala, 3 years): been responsible for a dye sensitized solar cell building activity
- Lange Nacht of Science (Berlin, 2 years): demonstration of water-splitting and fuel cell operation
- Organizer of GioST (Giornate della Scienza e Tecnica, Days of Science and Tecnology) for two years, a popular science workshop at my hometown

## Prizes

- Awarded the best poster prize in “material approaches”, ISF-2 conference, San Diego.
- Awarded the 1<sup>st</sup> poster prize at the Chemistry Mini-conference 2016, Uppsala Univ.;
- Awarded the 3<sup>rd</sup> poster prize for DSC in the 6<sup>th</sup> HOPV conference, Lausanne.

## Contact References (supervisors)

- Prof. Johannes Messinger, Dept. Chemistry-Ångström, Uppsala University, Sweden.  
johannes.messinger@kemi.uu.se
- Prof. Holger Dau, Dept. Experimental Physics, Free University Berlin, Berlin.  
holger.dau@fu-berlin.de
- Prof. Leif Hammarström, Dept. Chemistry-Ångström, Uppsala University, Sweden.  
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Supervised students:

- Shan Jiang, PhD stud. at FU Berlin, now at Fritz Haber Institute, Berlin, jiangshan@fhi-berlin.mpg.de
- Mareike Betchold, Ms stud., now PhD at KIT, Karlsruhe Institute of Technology, mareike.bechtold@kit.edu
- Robin Tybuski, Ms stud., now PhD at Uppsala University, robin.tybuski@kemi.uu.se
- M.Bruna Stella, Ms stud., now at Italmatch Chemicals, mariabruna.stella@gmail.com